



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PROCEEDINGS
OF THE
ROYAL SOCIETY OF LONDON.

From Feb. 23, 1854 to Dec. 20, 1855 inclusive

(BEING A CONTINUATION OF THE SERIES ENTITLED
“ABSTRACTS OF THE PAPERS COMMUNICATED TO
THE ROYAL SOCIETY OF LONDON”).

VOL. VII.

LONDON
PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET.

MDCCCLVI.

CONTENTS.

VOL. VII.

Continuation of a paper on Square Numbers, &c., read Dec. 22, 1853. By Sir Frederick Pollock, M.A., F.R.S.....	page 1
On a Class of Differential Equations, including those which occur in Dynamical Problems. By W. F. Donkin, M.A., F.R.S.	4
On the Growth of Land Shells. By E. J. Lowe, Esq., F.G.S., F.R.A.S.	8
Note on the Decomposition of Sulphuric Acid by Pentachloride of Phosphorus. By Alexander Williamson, Ph.D., F.C.S.	11
On a new and more correct method of determining the Angle of Aperture of Microscopic Object-Glasses. By W. S. Gillett, M.A.	16
On some new Compounds of Phenyl. By Alexander Williamson, Ph.D., F.C.S.	18
Note on an indication of depth of Primæval Seas, afforded by the re- mains of colour in Fossil Testacea. By Edward Forbes, F.R.S., Pres. G.S. &c.....	21
Note on the Melting-point and Transformations of Sulphur. By B. C. Brodie, Esq., F.R.S.....	24
On the Structure and Affinities of <i>Trigonocarpon</i> (a fossil fruit of the Coal-measures). By Joseph D. Hooker, M.D., F.R.S.	28
On a peculiar Arrangement of the Sanguiferous System in <i>Terebratula</i> and certain other Brachiopoda. By W. B. Carpenter, M.D., F.R.S.	32
On a new Series of Sulphuretted Acids. By Dr. August Kekulé ...	37
On the Changes produced in the Blood by the Administration of Cod- liver Oil and Cocoa-nut Oil. By Theophilus Thompson, M.D., F.R.S.	41
On a property of Numbers. By the Rev. James Booth, LL.D., F.R.S.	42
On Fessel's Gyroscope. By C. Wheatstone, Esq., F.R.S.	43
Account of Researches in Thermo-Electricity. By Professor W. Thomson of Glasgow, F.R.S.	49
An Introductory Memoir upon Quantics. By Arthur Cayley, Esq., F.R.S.	58

On the relation of the Angular Aperture of the Object-Glasses of Compound Microscopes to their penetrating power and to Oblique Light. By J. W. Griffith, M.D., F.L.S.....	page 60
On some conclusions derived from the Observations of the Magnetic Declination at the Observatory of St. Helena. By Colonel Edward Sabine, R.A., V.P.R.S.	67
Election of Fellows	82
The Bakerian Lecture.—On Osmotic Force. By Professor Graham, V.P.R.S.....	83
Examination of the Cerebro-spinal Fluid. By William Turner, Esq.	89
On the Oxidation of Ammonia in the Human Body. By H. Bence Jones, M.D., F.R.S.	94
On the Disintegration of Urinary Calculi by the Lateral Disruptive Force of the Electrical Discharge. By George Robinson, M.D. ...	99
The Attraction of Ellipsoids considered generally. By Matthew Collins, Esq., B.A.	103
Researches on the Impregnation of the Ovum in the Amphibia. (Third Series.) From the MS. papers of the late George Newport, Esq., F.R.S.....	104
Contributions to the Anatomy of the Brachiopoda. By Thomas H. Huxley, Esq., F.R.S.	106
On the production of Pictures on the Retina of the Human Eye.—Part II. By the Rev William Scoresby, D.D., F.R.S.	117
On the frequent occurrence of Indigo in Human Urine, and on its Chemical, Physiological and Pathological Relations. By Arthur Hill Hassall, M.D.	122
On the Effect of the Pressure of the Atmosphere on the Mean Level of the Ocean. By Captain Sir James Clark Ross, R.N., F.R.S.	123
On the Thermal Effects of Fluids in Motion.—No. II. By J. P. Joule, Esq., F.R.S., and Professor W. Thomson, F.R.S.	127
Note on Nitro-glycerine. By A. W. Williamson, Ph.D., F.C.S. ...	130
On a New Phosphite of Ethyl. By A. W. Williamson, Ph.D., F.C.S.	131
On some new derivatives of Chloroform. By A. W. Williamson, Ph.D., F.C.S.....	135
On the Structure of certain Microscopic Test-objects, and their Action on the Transmitted Rays of Light. By Chas. Brooke, M.A., F.R.S.	139
On the Constitution of Coal-tar Creosote. By Professor Williamson, Ph.D., F.C.S.....	143
On the Formation of Powers from Arithmetical Progressions. By C. Wheatstone, Esq., F.R.S.....	145
On the Structure and Functions of the Rostellum in <i>Listera ovata</i> . By J. D. Hooker, M.D., F.R.S.	152
On the Immediate Principles of the Excrements of Man and Animals in the Healthy Condition. By William Marcet, M.D.	153
On the Vine-Disease in the Port-wine Districts of the Alto-Douro, in April 1854. With a Supplementary Note on the proposed Remedies for its Eradication. By Jos. James Forrester, Esq., F.R.G.S.	155

Letter from Lieut. Maury to Admiral Smyth, For. Sec. R.S. ... page	165
Letter from W. Gravatt, Esq., F.R.S., to Colonel Sabine, Treas. R.S.	166
Observations on the Respiratory Movements of Insects. By the late William Frederick Barlow, Esq., F.R.C.S.....	167
On the Impregnation of the Ovum in the Stickleback. By W. H. Ransom, M.D.	168
On the applicability of Gelatine Paper as a Medium for Colouring Light. By Horace Dobell, Esq.	172
On the Theory of Definite Integrals. By W. H. L. Russell, B.A. ...	174
Anniversary Meeting	175
On the Attraction of the Himalaya Mountains, and of the elevated region beyond them, upon the Plumb-line in India. By the Venerable John Henry Pratt, M.A., Archdeacon of Calcutta	176
On the Value of Steam in the Decomposition of Neutral Fatty Bodies. By George Wilson, Esq.	182
The Physical Theory of Muscular Contraction. By Charles Bland Radcliffe, M.D.	183
On the Structure of some Limestone Nodules enclosed in Seams of Bituminous Coal, with a Description of some Trigonocarpons contained in them. By J. D. Hooker, M.D., F.R.S., and E. Binney, Esq.....	188
Remarks on the Anatomy of the <i>Macgillivrayia pelagica</i> and <i>Chele-tropis Huxleyi</i> (Forbes); suggesting the establishment of a new genus of Gasteropoda. By John D. Macdonald, R.N.....	191
On the Development of Muscular Fibre in Mammalia. By William S. Savory, M.D., F.R.C.S.	194
On the General Integrals of the Equations of the Internal Equilibrium of an Elastic Solid. By William John Macquorn Rankine, Esq., Civil Engineer, F.R.S. L. & E.	196
Note to a paper read before the Royal Society on the 11th of May, 1854. By J. W. Griffith, M.D., F.L.S.....	203
Researches on the Theory of Invariants. By William Spottiswoode, M.A., F.R.S.	204
Ocular Spectres and Structures as Mutual Exponents. By James Jago, A.B. Cantab., M B. Oxon.....	208
The Bakerian Lecture.—On the Nature of the Force by which Bodies are repelled from the Poles of a Magnet; preceded by an Account of some Experiments on Molecular Influences. By John Tyndall, Ph.D., F.R.S.	214
On Differential Transformation and the Reversion of Serieses. By J. J. Sylvester, Esq., F.R.S.....	219
Ocular Spectres and Structures as Mutual Exponents. By James Jago, A.B. Cantab., M.B. Oxon. (<i>concluded</i>).....	225
Micro-chemical researches on the Digestion of Starch and Amylaceous Foods. By Philip Burnard Ayres, M.D.	225
An Account of some recent Researches near Cairo, undertaken with the view of throwing light upon the Geological History of the Alluvial Land of Egypt.—Part First. By Leonard Horner, Esq., F.R.SS. L & E., F.G.S.	233

An Account of some recent Researches near Cairo, &c. By Leonard Horner, Esq.—Part First (<i>concluded</i>)	page 233
On the Computation of the Effect of the Attraction of Mountain-masses, as disturbing the apparent astronomical latitude of stations in Geodetic Surveys. By George B. Airy, Esq., F.R.S., Astronomer Royal	240
Note to a paper entitled “Contributions to the Anatomy of the Brachiopoda,” read June 15, 1854. By Thomas H. Huxley, Esq., F.R.S.	241
On the Temperature and Density of the Seas between Southampton and Bombay <i>vid</i> the Mediterranean and Red Seas. By MM. Adolphe, Hermann, and Robert Schlagintweit	242
On the Structure, Functions, and Homology of the Manducatory Organs in the Class Rotifera. By P. H. Gosse, Esq.	245
Address of the President	248
Obituary Notices of Deceased Fellows:—	
Professor Edward Forbes	263
Rear Admiral Sir John Franklin	270
Captain F. R. M. Crozier, R.N.	275
Professor Jameson	276
George Newport, Esq.	278
Nathaniel Wallich, M.D.	285
On the Structure, Functions, and Homology of the Manducatory Organs in the Class Rotifera. By P. H. Gosse, Esq. (<i>concluded</i>)	292
On the Perihelia and Nodes of the Planets. By Edward J. Cooper, Esq., F.R.S.	295
On Circumstances modifying the Action of Chemical Affinity. By J. H. Gladstone, Ph.D., F.R.S.	298
Researches on Organo-metallic Bodies. By E. Frankland, Ph.D., F.R.S. Second memoir	303
Note on the Magnetic Medium. By Prof. A. W. Williamson	306
Further Observations on the Anatomy of <i>Macgillivraya</i> , <i>Cheletropis</i> , and allied genera of pelagic Gasteropoda. By John Denis Macdonald, Esq., R.N.	309
On the Anatomy of <i>Nautilus umbilicatus</i> , compared with that of <i>Nautilus Pompilius</i> . By John Denis Macdonald, Esq., R.N.	311
On a Class of Differential Equations, including those which occur in Dynamical Problems.—Part II. By W. F. Donkin, M.A., F.R.S., F.R.A.S.	314
Extract of a Letter, dated January 6, 1855, from J. Mitchell, Esq., Quartermaster of Artillery, Bangalore, “On the Influence of Local Altitude on the Burning of the Fuses of Shells”	316
On the existence of an element of Strength in beams subjected to Transverse Strain, arising from the Lateral Action of the fibres or particles on each other, and named by the author the ‘Resistance to Flexure.’ By William Henry Barlow, Esq., F.R.S.	319
On the Metallic and some other Oxides, in relation to Catalytic Phenomena. By the Rev J. Eyre Ashby	322
Ocular Spectres and Structures as Mutual Exponents. By James Jago, A.B. Cantab., M.B. Oxon.	326

An Account of some Experiments made with the Submarine Cable of the Mediterranean Electric Telegraph. By Charles Wheatstone, Esq., F.R.S.	page 328
On the Descent of Glaciers. By the Rev. Henry Moseley, M.A., F.R.S.	333
Reply of the President and Council of the Royal Society to an application from the Lords of the Committee of Privy Council for Trade, on the subject of Marine Meteorological Observations. By Colonel E. Sabine	342
A Letter from Edwin Canton, Esq.	361
Some Observations on the Ova of the Salmon, in relation to the distribution of Species; in a letter addressed to Charles Darwin, M.A., V.P.R.S. &c. By John Davy, M.D., F.R.SS. Lond. & Edinb.....	362
Observations on the Anatomy and Affinities of the <i>Phyllirrhoë bucephala</i> (Peron). By John Denis Macdonald, Esq., R.N.	363
Brief sketch of the Anatomy of a new genus of pelagic Gasteropoda, named <i>Jasonilla</i> . By John Denis Macdonald, Esq., R.N.	368
Note on the position of Aluminum in the Voltaic series. By Charles Wheatstone, Esq., F.R.S.....	369
An Experimental Inquiry into the nature of the metamorphosis of Saccharine Matter, as a normal process of the animal economy. By Frederick W. Pavy, M.D.	370
An Experimental Inquiry into the nature of the metamorphosis of Saccharine Matter, as a normal process of the animal economy. By Frederick W. Pavy, M.D. (<i>concluded</i>)	371
Researches on the Partition of Numbers. By Arthur Cayley, Esq., F.R.S.	376
Further Researches on the Partition of Numbers. By Arthur Cayley, Esq., F.R.S. With Postscript	377
An Experimental Inquiry undertaken with the view of ascertaining whether any <i>force</i> is evolved during Muscular Contraction analogous to the <i>force</i> evolved in the Fish Gymnotus, and Torpedo. By Henry Foster Baxter, Esq.....	378
On a simple Geometrical Construction, giving a very approximate Quadrature of the Circle. By C. M. Willich, Esq.	379
A Second Memoir upon Quantics. By Arthur Cayley, Esq., F.R.S.	380
On a Decimal Compass Card. By James M. Share, Esq., Master R.N.	381
On the Theory of the Electric Telegraph. By Professor William Thomson, F.R.S.	382
Observations on the Human Voice. By Manuel Garcia, Esq.	399
Annual General Meeting for the Election of Fellows	411
Remarks on the Rev. H. Moseley's Theory of the Descent of Glaciers. By James D. Forbes, D.C.L., F.R.S.	412
Researches on the Foraminifera.—Part I. General Introduction, and Monograph of the Genus <i>Orbitolites</i> . By William B. Carpenter, M.D., F.R.S.	417
On a supposed Aërolite or Meteorite found in the Trunk of an old Willow Tree in the Battersea Fields. By Sir Roderick Impey Murchison, F.R.S.	421

On the Magnetism of Iron Ships, and its accordance with Theory, as determined externally, in recent Experiments. By the Rev. W. Scoresby, D.D., F.R.S.....	page 431
Extract of a Letter from Professor Langberg of Christiania to Colonel Sabine, dated June 10, 1855	434
Anatomical Notices. By Professor Andrew Retzius, of Stockholm ...	437
On the Effect of Local Attraction upon the Plumb-line at stations on the English Arc of the Meridian, between Dunnose and Burleigh Moor; and a Method of computing its Amount. By the Venerable Archdeacon Pratt	440
Contributions to the history of Aniline, Azobenzole and Benzidine. By A. W. Hofmann, Ph.D., F.R.S.	444
On the Formation and some of the Properties of Cymidine, the Organic Base of the Cymol Series. By the Rev. John Barlow, F.R.S.....	446
Letter from Dr. Herapath to Professor Stokes, On the Compounds of Iodine and Strychnine	447
On the Existence of a Magnetic Medium. By T. A. Hirst, Esq.....	448
On the ultimate Arrangement of the Biliary Ducts, and on some other points in the Anatomy of the Liver of Vertebrate Animals. By Lionel S. Beale, M.B.	454
Experimental Researches on the Movement of Atmospheric Air in Tubes. By W. D. Chowne, M.D. ...	466
On the Constitution and Properties of Ozone. By Thomas Andrews, M.D., F.R.S.	475
On Rubian and its Products of Decomposition.—Part III. By Edward Schunck, Esq., F.R.S.	477
On the Enumeration of x -edra having an $(x-1)$ -gonal Face, and all their Summits Triedral. By the Rev. Thomas P. Kirkman, A.M.	482
Notes on British Foraminifera. By J. Gwyn Jeffreys, Esq., F.R.S.	485
Preliminary Research on the Magnetism developed in Iron Bars by Electric Currents. By J. P. Joule, Esq., F.R.S.	488
Discussion of the observed Deviations of the Compass in several Ships, Wood-built and Iron-built; with General Tables for facilitating the examination of Compass-deviations. By G. B. Airy, Esq., F.R.S., Astronomer Royal	491
On Axes of Elasticity and Crystalline Forms. By W. J. Macquorn Rankine, Esq., C.E., F.R.SS. L. & E. &c.	495
Report of a Committee appointed by the Council to examine the Calculating Machine of M. Scheutz	499
Report made to the President and Council of the Royal Society, of Experiments on the Friction of Discs revolving in Water. By James Thomson, Esq., C.E., Belfast	509
Account of the appropriation of the sum of £5000, placed by Her Majesty's Government, in five annual sums of £1000 each, in the years 1850 to 1854 inclusive, at the disposal of the Royal Society, to be employed in aiding the promotion of Science in the United Kingdom.....	512
Experimental Researches in Electricity. Thirtieth Series. By Michael Faraday, D.C.L., F.R.S. &c.	523

Experimental Researches in Electricity. Thirtieth Series. By Michael Faraday, D.C.L., F.R.S., &c. (<i>concluded</i>)	page 524
Discussion of the observed Deviations of the Compass in several ships, Wood-built and Iron-built; with General Tables for facilitating the examination of Compass-deviations. By G. B. Airy, Esq., F.R.S., Astronomer Royal	527
Anniversary	527
On the Determination of the Dew-point by means of the Dry- and Wet-Bulb Thermometers. By Lieut. Noble, R.N., Toronto	528
On Chemical Affinity, and the Solubility of the Sulphate of Baryta in Acid Liquors. By F. Crace Calvert, Esq.	532
Results of the Examination of certain Vegetable Products from India. —Part I. By John Stenhouse, LL.D., F.R.S.	536
On the Representation of Polyhedra. By the Rev. Thomas P. Kirkman, A.M.	543
On the Action of Sulphuric Acid on the Nitriles and on the Amides. By G. B. Buckton, Esq., and A. W. Hofmann, Ph.D., F.R.S.	544
On the Structure and Development of the <i>Cysticercus Cellulosæ</i> , as found in the Pig. By George Rainey, Esq.	548
Further Researches on the Polarity of the Diamagnetic Force. By John Tyndall, Ph.D., F.R.S.	555
Address of the President	560
Obituary Notices of Deceased Fellows :—	
Martin Barry, M.D.	577
Sir Henry Thomas De la Beche, C.B. &c.	582
Bryan Donkin, Esq.	586
Charles Frederic Gauss	589
George Simon Ohm	598
Rear-Admiral Sir William Edward Parry.....	603
Richard Sheepshanks, Esq.	612